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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/643,674	08/19/2003	Suong-Hyu Hyon	1736-000001/REB	5762
27572 7590 11/29/2010 HARNESS, DICKEY & PIERCE, P.L.C. P.O. BOX 828 BLOOMFIELD HILLS, MI 48303				
EXAMINER				
BERMAN, SUSAN W				
ART UNIT		PAPER NUMBER		
1765				
MAIL DATE		DELIVERY MODE		
11/29/2010		PAPER		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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*Ex parte* SUONG-HYU HYON  
and MASANORI OKA

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Appeal 2010-006737  
Application 10/643,674  
to reissue U.S. Patent 6,168,626  
Technology Center 1700

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Before ALLEN R. MacDONALD, MICHAEL P. COLAIANNI, and  
KEN B. BARRETT, *Administrative Patent Judge*.

COLAIANNI, *Administrative Patent Judge*.

DECISION ON APPEAL<sup>1</sup>

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<sup>1</sup> The two-month time period for filing an appeal or commencing a civil action, as recited in 37 C.F.R. § 1.304, or for filing a request for rehearing, as recited in 37 C.F.R. § 41.52, begins to run from the “MAIL DATE” (paper delivery mode) or the “NOTIFICATION DATE” (electronic delivery mode) shown on the PTOL-90A cover letter attached to this decision.

Appellants appeal under 35 U.S.C. § 134 the final rejection of claims 40, 41, 43, 45-53, 84, 85, 87, 89-97, and 99-101 in this divisional reissue application of U.S. Patent 6,168,626 to Suong-Hyu Hyon et al. We have jurisdiction over the appeal pursuant to 35 U.S.C. § 6(b).

We AFFIRM.

Appellants disclose a method of making ultrahigh molecular weight polyethylene (UHMWPE) articles (Hyon col. 1, ll. 7-10).

Claims 40 and 84 are illustrative:

40. A method for producing an ultra high molecular weight polyethylene block, comprising

(a) crosslinking an ultra high molecular weight polyethylene block having a molecular weight not less than 5 million by irradiating the block with a high energy radiation at a level of at least 1 MR;

(b) heating said crosslinked block up to a compression deformable temperature below the melting point of the UHMWPE;

(c) subjecting said heated block to pressure; and then

(d) cooling said block.

84. A method for producing an ultra high molecular weight polyethylene artificial joint component for implantation in a human or other animal, comprising:

(a) crosslinking an ultra high molecular weight polyethylene block having a molecular weight not less than 5 million by irradiating the block with a high energy radiation at a level of at least 1 MR,

(b) heating said crosslinked block up to a compression deformable temperature below the melting point of the UHMWPE;

- (c) subjecting said heated block to pressure; then
- (d) cooling said block; and
- (e) processing said cooled block to form said component.

Appellants appeal the following rejections:

1. Claims 40, 41, 43, 45-53, 84, 85, 87, 89-97, and 99-101 are rejected under 35 U.S.C. § 251 as improperly recapturing subject matter surrendered during prosecution of US Patent 6,168,626.
2. Claims 40, 41, 43, 45-53, 84, 85, 87, 89-97, 100, and 101 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Zachariades (US Patent 5,030,402, patented Jul. 9, 1991) in view of Kitamaru (US Patent 3,886,056, patented May 27, 1975).
3. Claim 99 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Zachariades in view of Kitamaru and Li (US Patent 5,037,928, patented Aug. 6, 1991).

Appellants argue the claims as a group with their arguments primarily directed to claims 40 and 84 (App. Br. 5-31). Therefore, we focus on claims 40 and 84 only in addressing Appellants' arguments regarding rejections (1) and (2). Appellants advance no further substantive argument regarding rejection (3) (App. Br. 32-33)

*Rejection (1): Recapture*

ISSUE

Did the Examiner err in determining that Appellants' broadening changes in claims 40 and 84 do not avoid the recapture rule by the further change of claims 40 and 84 to recite that the deformation temperature is

“below the melting point of the UHMWPE” because such a limitation is claimed in 6,168,626 and thus not an additional material limitation directed to overlooked subject matter? We decide this issue in the negative.

### PRINCIPLE OF LAW

Application of the recapture rule is a three-step process. The first step is to “determine whether and in what ‘aspect’ the reissue claims are broader than the patent claims.” “The second step is to determine whether the broader aspects of the reissued claim related to surrendered subject matter.” Finally, the court must determine whether the reissued claims were materially narrowed in other aspects to avoid the recapture rule.

*Pannu v. Storz Instruments, Inc.*, 258 F.3d 1366, 1371 (Fed. Cir. 2001) (citations omitted).

The recapture rule may be avoided in a reissue application if the reissue claims are materially narrower than the original claims in other overlooked aspects of the invention. *Hester Indus. Inc. v. Stein Inc.*, 142 F.3d 1472, 1482-83 (Fed. Cir. 1998) (interpreting the “materially narrowed” aspect of the recapture rule as cited in e.g., *In re Clement*, 131 F.3d 1464, 1470 (Fed. Cir. 1997)).

### FACTUAL FINDINGS (FF)

We adopt the Examiner’s findings of fact on pages 3-5 and 8-14 of the Answer as our own.

### ANALYSIS

Appellants argue that claims 40 and 84 do not recapture surrendered subject matter (App. Br. 5). With regard to the first step summarized by the

court in *Pannu* for determining if surrendered subject matter has been recaptured, Appellants either do not contest the Examiner's finding that the claims are broadened in the respects noted on pages 4-5 of the Answer, or Appellants merely concede that the claim limitation rephrases what was previously claimed (App. Br. 8-11).

With regard to the second step summarized by the *Pannu* court, Appellants argue that the broadening or rephrasing of the features is not an attempt to recapture surrendered subject matter because the claims of the divisional reissue are directed to an invention distinct from the invention claimed in the 6,168,626 patent (App. Br. 11-12). Appellants contend that claims 40 and 84 are derived from claims 40 and 84, respectively, which were part of the parent reissue application and were subject to a restriction requirement by the Examiner (App. Br. 16). Appellants contend that the Examiner's restriction evinces that the claims of the divisional reissue application are distinct from the claims of patent 6,168,626 (App. Br. 13-16).

These arguments are not persuasive because the divisional reissue claims are of a different scope than the original reissue claims and include features that are present in claims 3-6 of the patent 6,168,626 as explained by the Examiner (Ans. 10). In other words, the claims have been amended so as to cause the Examiner to reevaluate the basis for restriction and to determine that the divisional reissue claims 40 and 84 are of a different scope and are related to the claims of patent 6,168,626 unlike claims 40 and 84 of the parent reissue application (Ans. 10). We agree.

The Examiner correctly explains that claims 3-6 of patent 6,168,626 contain the subject matter of claims 40 and 84 and that claims 40 and 84

include subject matter surrendered during prosecution of the patented claims (Ans. 4-5, 9-10). Therefore, it appears that Appellants are attempting to recapture subject matter surrendered during prosecution of the application that issued as patent 6,168,626.

Regarding the third step of the recapture analysis recited in *Pannu*, Appellants argue that even if the claims are broadened in certain respects, the claims are materially narrowed in other respects so as to avoid the recapture rule (App. Br. 17). Appellants argue that limiting the deformation temperature range to below the melting point of UHMWPE in claims 40 and 84 materially narrows the claims so as to avoid the recapture rule (App. Br. 17-21).

The Examiner responds that adding the limitation that the deformable temperature is below the melting point does not materially limit the scope of the reissue claims relative to patent claim 5 that recites the deformable temperature is in a range between 50°C lower than the melting temperature of the crosslinked ultra high molecular weight polyethylene to 80°C higher than the melting temperature (Ans. 10-13). The Examiner further notes that the deformable temperature range claimed in divisional reissue claims 40 and 84 is encompassed by claim 5 of patent 6,168,626 (*Id.*). We agree.

Appellants argue that limiting the deformable temperature to below the melting point of the UHMWPE removes more than half of the range of suitable temperatures encompassed by the original method claims canceled during prosecution (App. Br. 21; Reply Br. 8). In other words, Appellants agree that the range claimed in the divisional reissue is subsumed by the

patented claims that recite an overlapping temperature range.<sup>2</sup> Because the broadened claims include a portion of the deformable temperature range that was previously prosecuted, the claims of the divisional application are not directed to an overlooked subject matter and thus, fail to materially narrow the claims relative to the patent claims with regard to an overlooked aspect of Appellants' invention. *Hester Indus. Inc. v. Stein Inc.*, 142 F.3d 1472, 1482-83 (Fed. Cir. 1998). *See also, Manual of Patent Examining Procedures (MPEP)*, § 1412.02(V) (8<sup>th</sup> ed. July 2010) (PTO interpreting *Hester* states, "A limitation that had been prosecuted in the original patent application is not directed to "overlooked aspects" of the disclosed invention and will not overcome the recapture rejection.").

Appellants argue that the temperature range in the reissue claims was neither presented nor prosecuted and thus constitutes an overlooked aspect (Reply Br. 10). However, we note, like the Examiner (Ans. 10-11), that the temperature range claimed in the reissue application is included in the range claimed in the patented claims 3-6. Therefore, the temperature range claimed in the reissue application was prosecuted as part of the range in the patented claims.

Appellants' arguments regarding whether the temperature range of the reissue claims is "narrower in an aspect unrelated to the rejection" as stated by the court in *Clement* is not necessary for us to reach because the court in

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<sup>2</sup> We further note that the claim limitation that the deformable temperature is "below the melting point of the UHMWPE" appears to be broader than the original claims with respect to the lower limit on the temperature range. The original patented claim 5 included a lower limit of 50°C below the melting point on the temperature range (claim 5 of 6,168,626 patent). The claims now include deformable temperatures that are greater than 50°C below the melting point.



*Hester* appears to have construed the meaning of that portion of the *Clement* decision regarding narrow aspects as requiring the reissue claims be “materially narrower in . . . overlooked aspects of the invention.” *Hester*, 142 F.3d at 1482-83. Therefore, our analysis above regarding *Hester* addresses these arguments.

For the above reasons, we agree with the Examiner that the changes to the claims enumerated on pages 3-5 of the Answer attempt to recapture surrendered subject matter and violate § 251 and Appellants’ attempts to narrow the reissue claims does not avoid the recapture rule. We affirm the Examiner’s rejection of claims 40, 41, 43, 45-53, 84, 85, 87, 89-97, and 99-101 under 35 USC § 251 as improperly attempting to recapture surrendered subject matter.

#### *Rejections (2) & (3)*

Appellants argue the claims under rejection (2) as a group, of which we select claims 40 and 84 as representative. 37 C.F.R. § 47.31(c)(1)(vii). Appellants provide no further argument regarding the rejection of claim 99 under rejection (3) (App. Br. 32-33). Therefore, claim 99 stands or falls with claim 84.

#### ISSUE

Did the Examiner err in determining that the combined teachings of Zachariades and Kitamaru would have rendered obvious the subject matter of claims 40 and 84? We decide this issue in the negative.

## PRINCIPLES OF LAW

When assessing the obviousness of claimed subject matter, a court must ask whether the improvement is more than the predictable use of prior art elements according to their established function. *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 417 (2007).

## ADDITIONAL FACTUAL FINDINGS

We adopt the Examiner's findings of fact on pages 5-8 and 14-16 as our own.

## ANALYSIS

Appellants argue that there is no apparent rationale for combining Zachariades with Kitamaru other than impermissible hindsight (App. Br. 29). Appellants contend that Zachariades' invention is directed to forming prosthetic materials which are different materials than Kitamaru's films or sheets such that an ordinarily skilled artisan would not have any reason to look to Kitamaru (App. Br. 30). Appellants argue that Zachariades teaches to cross-link after molding such that one skilled in the art would not have modified Zachariades process to cross-link before molding (*id.*). Appellants contend that the Examiner has provided no rationale regarding why just one of Kitamaru's features would have been selected to be combined with Zachariades (App. Br. 31).

Contrary to Appellants' arguments, the Examiner's rationale is based on the fact that both Zachariades and Kitamaru teach the same material (UHMWPE) and Kitamaru teaches benefits of improved transparency and excellent dimensional stability at high temperatures by cross-linking before deformation of the UHMWPE (Ans. 6-7). As the Examiner finds, Kitamaru

teaches that cross-linking the UHMWPE prior to extending or shaping increases the melting point and the dimensional stability at high temperatures improves (Kitamura, col. 2, ll. 13-25; Ans. 7). Indeed, Kitamaru focuses on cross-linking prior to extending as the reason for providing the improved properties. Accordingly, the art provides the focus on using the cross-linking step prior to molding.

Based on the art's focus on cross-linking prior to molding to improve the properties of the material, using such a technique appears to be nothing more than the predictable use of a prior art element (i.e., cross-linking prior to molding) according to its established function (i.e., to improve material properties such as increase the melting point). *KSR*, 550 U.S. at 417. Appellants disclose that that the oriented (i.e., irradiated to crosslink) UHMWPE has improved thermal properties such as increased melting point (Hyon, col. 2, ll. 47-55; col. 3, ll. 10-15; col. 7, ll. 4-5). Because Appellants have not shown any error in the Examiner's stated rationale, we are unpersuaded by the argument.

We are unpersuaded by Appellants' argument that Zachariades (artificial joints) and Kitamaru (i.e., films, sheets, fibers) are directed to different products such that one skilled in the art would not have looked to the other reference. As noted, the Examiner relies on the fact that both references teach using UHMWPE as a reason for combining the teachings. Moreover, Zachariades teaches forming UHMWPE structures with "reduced thicknesses" or a "thinner load" having enhanced mechanical properties (col. 2, ll. 39-68; col. 3, ll. 45-49). The Examiner finds that Zachariades' acetabular cup is a thin structure such as a film or sheet (Ans. 15). Appellants do not respond to this finding. Accordingly, Appellants have not

shown error in the Examiner's finding that the structures of Zachariades and Kitamaru are structurally similar.

Appellants' argument that there is no reason to modify Zachariades' process that teaches cross-linking after molding to use Kitamaru's teachings improperly attacks the references individually instead of looking at the teachings of the references as a whole. For the reasons noted above, Kitamaru provides the reason for modifying Zachariades to cross-link before extending: to provide UHMWPE articles with improved dimensional stability and transparency at high temperatures.

Regarding claim 84, Appellants argue that the prior art fails to teach further processing to make a final product after deforming and cooling the UHMWPE (App. Br. 31). However, Zachariades teaches that the deformed UHMWPE can be used as a precursor for its machining into a final product as explained by the Examiner and that post-processing (i.e., after molding) includes cutting off the excess by, for example, by stamping (Ans. 16; col. 4, ll. 15-18). Appellants do not dispute these findings.

For the above reasons, we affirm the Examiner's § 103 rejections of claims 40, 41, 43, 45-53, 84, 85, 87, 89-97, 100, and 101 over Zachariades in view of Kitamaru and of claim 99 over Zachariades in view of Kitamaru and Li.

## DECISION

The Examiner's decision is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(2010).

Appeal 2010-006737  
Application 10/643,674

ORDER  
AFFIRMED

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